U.S. FISH AND WILDLIFE SERVICE
SPECIES ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: *Potentilla basaltica*

COMMON NAME: Soldier Meadow cinquefoil, basalt cinquefoil

LEAD REGION: Region 8

INFORMATION CURRENT AS OF: October 2005

STATUS/ACTION
___ Species assessment - determined we do not have sufficient information on file to support a proposal to list the species and, therefore, it was not elevated to Candidate status
___ New candidate
_X__ Continuing candidate
___ Non-petitioned
_X__ Petitioned - Date petition received: May 11, 2004
_ 90-day positive - FR date:
_ 12-month warranted but precluded - FR date:
_ Did the petition request a reclassification of a listed species? No
FOR PETITIONED CANDIDATE SPECIES:
a. Is listing warranted (if yes, see summary of threats below)? Yes
b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? Yes
c. If the answer to a. and b. is "yes", provide an explanation of why the action is precluded.

The petition received in May 2004 to list all 225 candidate species, including *P. basaltica* as an endangered species under the Endangered Species Act, was largely based on the present or threatened destruction, modification, or curtailment of its habitat or range, disease or predation, the inadequacy of existing regulatory mechanisms, and other natural or manmade factors affecting its continued existence (Center for Biological Diversity (CBD) *et al.* 2004). In addition, the petitioners state that these species have been on the candidate list for 17 years or more, and such delays have contributed to the extinction of many non-listed species (CBD *et al.* 2004). We considered the information contained in the petition in this assessment; however, no new substantive data on *P. basaltica* was presented.

We find that the immediate issuance of a proposed rule and timely promulgation of a final rule for this species has been, for the preceding 12 months, and continues to be, precluded by higher priority listing actions (including candidate species with lower LPNs). During the past 12 months, almost our entire national listing budget has been consumed by work on various listing actions to comply with court orders and court-approved settlement agreements, emergency listings, and essential litigation-related, administrative, and program management functions. We will continue to monitor the status of this species as new information becomes available. This review will determine if a change in status is warranted, including the need to make prompt use of emergency listing procedures. For information on listing actions taken over the 12 months,

see the discussion of "Progress on Revising the Lists," in the current CNOR which can be viewed on our Internet website (http://endangered.fws.gov/).

___ Listing priority change
Former LP: _5__
New LP: _11__

Date when the species first became a Candidate (as currently defined): June 13,2002

___ Candidate removal: Former LPN: ___

___ A – Taxon is more abundant or widespread than previously believed or not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.

___U – Taxon not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status due, in part or totally, to conservation efforts that remove or reduce the threats to the species.

___ F – Range is no longer a U.S. territory.

___ I – Insufficient information exists on biological vulnerability and threats to support listing.

___ M – Taxon mistakenly included in past notice of review.

___ N – Taxon does not meet the Act's definition of "species."

___ X – Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Flowering Plants, Rosaceae (Rose Family)

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Nevada and California

CURRENT STATES/COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE: Humboldt County, Nevada and Lassen County, California

LAND OWNERSHIP: In Nevada, all but one of the *P. basaltica* occurrences is on lands managed by the BLM, Winnemucca District. The species occurs within a grazing allotment and an ACEC that are overlain by the NCA (BLM 2003). The other Nevada occurrence and the Ash Valley, California, population are on private land.

LEAD REGION CONTACT: Diane Elam (CNO) (916) 414-6464

LEAD FIELD OFFICE CONTACT: Steve Caicco, Nevada FWO, (775) 861-6341; Roberta Gerson, Sacramento FWO, (916) 414-6630

BIOLOGICAL INFORMATION

Species Description: *Potentilla basaltica* is a low growing, rhizomatous, herbaceous perennial known only from Soldier Meadow in Humboldt County, Nevada, and Ash Valley in Lassen County, California. The species grows from a stout taproot and has several decumbent stems that are glabrous and become purplish with age. There are numerous prostrate, pinnate, minutely ciliate leaves that form a basal rosette. The flowers are bright yellow with a shallow notch at the tip and a bowl-shaped hypanthium (Knight 1990). It begins flowering in May and continues through the summer (Knight 1990). It is believed that this species is capable of self-pollination

(Knight 1990); insect pollination has not been documented or researched (Service 1997). Little research has been conducted to understand the life history of this species, its ecological requirements, population biology, and genetic variability.

Taxonomy: *Potentilla basaltica* was first noted in 1982 in Nevada. The type specimen was collected in 1983 and the species was formally described by Tiehm and Ertter (1984). This species is one of several in the genus that has sessile, simple lobed leaflets and small flowers resembling those of the genus *Ivesia*. Tiehm and Ertter (1984) assigned the species to *Potentilla* based on petal size, stamen attachment near the rim of the hypanthium, and phenology. The generic distinction between *Ivesia* and *Potentilla* was considered unclear; however, further investigations have determined that *P. basaltica* is a valid taxon (Nevada Natural Heritage Program (NNHP) 1999). Current information on taxonomic validity was reviewed on the Jepson Flora Project website; *Potentilla basaltica* is the accepted name for a taxon native to California valid taxonomic name (http://ucjeps.berkeley.edu/cgi-bin/get_cpn.pl?39680&expand=1; website accessed on October 28, 2005).

Habitat/Life History: *Potentilla basaltica* occurs in or near alkali meadows, seeps, and marsh habitats bordering perennial thermal springs, outflows, and meadow depressions between 4,330 and 5,100 feet (ft) (1,320 and 1,555 meters (m)) elevation (Service 1997; Knight 1990). The meadows and springs systems, which have moist to saturated soils, are dominated by short to moderately tall perennial grasses and herbs (Nachlinger 1991). The alkali marshes generally have standing water of variable depth (Nachlinger 1991). *Potentilla basaltica* occurs along margins of streambanks where water temperature extremes are moderated (Knight 1990). Plants are usually not found adjacent to downstream reaches of the spring outflows, possibly due to higher nutrient concentrations, richer soils, and/or increased salt accumulations (Knight 1990).

Soldier Meadow lies in northwestern Nevada at the northern edge of the Black Rock Desert in the transition zone between the Basin and Range and the Columbia Plateau Physiographic Provinces. This region is characterized by cold, dry winters influenced primarily by cool, polar air masses, and by hot, dry summers influenced primarily by warm, tropical air masses (Nachlinger 1991). Soldier Meadow lies between the Calico Mountains to the west and the Black Rock Range to the east. The vegetation is broadly classified into four wetland communities and three upland communities, one of which is considered transitional to wetlands. Over 60 plant species occur in the marshes, seeps, and wet meadows. Abour 45 thermal springs occur in the area, at elevations ranging from 4,330 and 4,570 ft (1,320 and 1,393 m) (Nachlinger 1991). Some of the springs provide the only known habitat for the federally listed desert dace (*Eremichthys acros*) and the elongate Mud Meadows springsnail (*Pyrgulopsis notidicola*), a Federal candidate species, both of which are endemic to the Soldier Meadow region (Knight 1990; Service 2002).

In northeastern California, *P. basaltica* is known from Ash Valley near Ash Creek between 5,000 and 5,200 ft (1,525 and 1,586 m) elevation (California Natural Diversity Data Base (CNDDB) 2002). This population was found on the sub-alkaline border between a meadow system and the sagebrush-conifer ecotone, in an area previously disturbed by road construction (Service 1997). Vegetation cover is generally sparse, and associated species include sagebrush (*Artemisia tridentata*), various rush species (*Juncus* spp.), sedge species (*Carex* spp.), and

buttercup (*Ranunculus occidentalis*) (CNDDB 2002).

Historical Range/Distribution: At the time of its description in 1984, *Potentilla basaltica* was only known to occur in Nevada. It was subsequently discovered in California.

Current Range/Distribution: In Nevada, *P. basaltica* has been documented from 10 discrete occurrences within the Soldier Meadow area of the Black Rock Desert. Despite extensive surveys of all spring systems in the Soldier Meadow area, this species has only been observed within an area of about 70 acres (ac) (28 hectares (ha)) (Nachlinger 1991). Based on Global Positioning System data taken in 2002, the known occupied sites total approximately 24 ac (9.6 ha). Most of the occurrences are somewhat fragmented and small, ranging from 0.031 to 5.85 ac (0.013 to 2.37 ha) (Jody Fraser, Service, pers. obs. 2002). Unoccupied, apparently suitable habitat previously surveyed (Knight 1990; Nachlinger 1991) was not revisited in 2002.

The only known California population of *P. basaltica* occupies less than an acre on private lands (CNDDB 2002). No data subsequent to 1993 have been obtained for this species at this site.

Population Estimates/Status: *P. basaltica* has been documented from 10 small occurrences in Soldier Meadow that were estimated to support about 84,000 individuals in 1990 (Knight 1990). Qualitative surveys of the known populations in 2002 estimated approximately 130,000 individuals and habitat conditions appeared stable (Gina Glenne, Service, pers. comm. 2002; Roger Farschon, BLM, pers. comm. 2003). The northeastern California population of *P. basaltica* was estimated at fewer than 1,000 individuals in 1993 (CNDDB 2002). This site is presumed extant; however, surveys to relocate the species have not been conducted and the status of this site is unknown. Also, surveys in the vicinity of Ash Valley, and between Ash Valley and Soldier Meadow, have failed to locate any additional populations (Service 1997).

THREATS

A. The present or threatened destruction, modification, or curtailment of its habitat or range. Populations of *P. basaltica* are distant from urban centers, but occur in areas popular for recreation and affected by livestock grazing. While all occurrences of *P. basaltica* are currently presumed extant, all are affected by land uses within and around Ash Valley in California and the Black Rock region in Nevada (Knight 1990; Nachlinger 1991; G. Glenne, pers. comm. 2002; CNDDB 2002; Selena Werdon, Service, pers. comm. 2002).

Various impacts to *P. basaltica* populations and habitat have occurred in past years and most continue to affect the species to various degrees, including stream channelization, diversion of spring outflow for livestock and recreational uses; trampling by livestock; degradation or conversion of habitat for agriculture and recreation; development of hot springs and camping areas; roads and vehicles; geothermal exploration; and introduction of invasive, nonnative species (Knight 1990).

The physical alteration of the spring systems and upland habitats in Soldier Meadow for ranching activities began well over 100 years ago (Service 1997). Many modifications to the landscape were made to accommodate these uses. Changes to the hydrological regime through permanent and seasonal water diversions have resulted in the loss or alteration of *P. basaltica*

habitat, as well as habitat that once supported the desert dace (Service 1997).

The spring systems and riparian areas that provide habitat for the species are attractive to native and domestic animals due to the presence of water, succulent vegetation adjacent to streams, and gentle topography (Minshall *et al.* 1989). Trampling by livestock and wildlife occurred throughout *P. basaltica* habitat until recently. Springs and riparian habitats were negatively affected by channel widening, bank degradation, lowering of the water table, and increased sedimentation into streams (Service 1997).

Soldier Meadow is part of an active grazing allotment, although the central portion which supports much of the habitat for the sensitive species including the basalt cinquefoil has recently been fenced to exclude domestic livestock, wild horses, and other large mammals. Cattle are still occasionally trailed through the exclosure enroute to other pastures in the allotment, but are not held in the exclosure (M. Varner, BLM, pers. comm. 2004). The habitats in which *Potentilla basaltica* grows, however, has been historically affected by grazing animals through removal of vegetation which can expose soils, increase erosion, modify the hydrologic regime, and facilitate invasion by nonnative species (Nachlinger 1991). Trampling has negatively affected habitat in nearly all of the *P. basaltica* occurrences.

Recreational uses in the area include bathing in the thermal springs and camping in the immediate vicinity of the spring outflows. Users have constructed rock dams and excavated the outflows to create deep pools that accumulate silt and sand (Service 1997). Due to their proximity to the springs, *P. basaltica* plants are subject to damage associated with these activities (Nachlinger 1991). August through October is the highest recreational use period for this area, when the species is still flowering and beginning to produce fruit. Recreation use is encouraged by the gentle topography of the meadows and the prevalence of access roads (Service 1997). Increased use of the spring systems for bathing and the upland sites for camping has resulted in the severe degradation of several *P. basaltica* sites. In some areas, the landscape has been denuded of vegetation and soils have been compacted, offering little opportunity for reestablishment of the species (J. Fraser, pers. obs. 2002; S. Werdon, pers. comm. 2002).

Vehicle counts and observed visitor use data show that during the summer of 1990, approximately 2,800 people visited the Black Rock Desert. Between 1994 and 1995, visitor use had increased by 4,000 12-hour visitor days (Bureau of Land Management (BLM) 1998). By 2001, dispersed recreational users increased to nearly 70,000 (BLM 2003). The highest use of Soldier Meadow occurs on Memorial Day weekend and the opening day of chukar hunting season; in 2003, about 26 separate hunting camps were counted with an estimated 100 people (R. Farschon, pers. comm., 2005). The visibility of the area has also increased since the designation of the Black Rock Desert-High Rock Canyon Emigrant Trails National Conservation Area (NCA) in 2000 (R. Farschon, pers. comm. 2002; BLM 2003). In the fall of 2004, the BLM constructed a central campground away from the habitats for sensitive species at Soldier Meadow (M. Varner, pers. comm., 2005).

To gain access to these areas, recreational users and allotment permittees previously utilized a network of roads, many of which were not authorized or maintained. This resulted in fragmented and degraded habitat. In addition, vehicle tracks have been observed in the meadows

where users have traversed the area to reach a spring or campsite (Nachlinger 1991; J. Fraser, pers. obs. 2002; S. Werdon, pers. comm. 2002). The BLM has recently closed many of these routes and restricted vehicles to designated routes.

The Soldier Meadow area was subject to intensive geothermal exploration in the 1970s. The maximum temperature of the aquifer was deemed insufficient to support economic development at that time. Some portions of the species' habitat were protected from exploration and development activities through the Area of Critical Environmental Concern (ACEC)/Research Natural Area (RNA) designation for the desert dace (Service 1997). The entire area was removed from geothermal exploration by the establishment of the National Conservation Area (R. Farschon, pers. comm., 2005).

The wetland communities occupied by *P. basaltica* have also been invaded by nonnative plant species. Some of the common nonnative species include, but are not limited to, smotherweed (*Bassia hyssopifolia*), Russian olive (*Elaeagnus angustifolia*), peppergrass (*Lepidium perfoliatum*), low whitetop (*Cardaria draba*), and cocklebur (*Xanthium strumarium*) (Nachlinger 1991). These nonnative species may compete with or displace native species including *P. basaltica* in disturbed areas or under conditions that favor their growth (Service 1997). Invasion by nonnative species also causes degradation of native habitats and can result in monotypic stands of undesirable species.

The most significant threats to the species in the recent past have been recreational use of spring outflows for bathing, camping in the upland areas, and livestock grazing and associated activities. Actions have only recently been taken to address these threats. Monitoring needs to be implemented to assess the effects of these management actions. See the discussion of Conservation Measures Planned or Implemented below for further discussion of ongoing actions to mitigate these impacts.

B. Overutilization for commercial, recreational, scientific, or educational purposes. None identified..

C. Disease or predation. *Potentilla basaltica* is not known to be palatable to livestock or wildlife. No disease or herbivory has been observed at any of the populations (Knight 1990; G. Glenne, pers. comm. 2002; J. Fraser, pers. obs. 2002).

D. The inadequacy of existing regulatory mechanisms. *Potentilla basaltica* was designated as a category 1 candidate species on February 21, 1990 (55 FR 6184). On July 26, 1995, this species was reassigned to category 2 candidate status and subsequently designated a species of concern (61 FR 7462). This designation was assigned as a result of portions of the habitat coming under Federal (BLM) jurisdiction in 1993.

The BLM classifies *P. basaltica* as a sensitive species. As such, the BLM is directed to manage for sensitive species and their habitats and consider these resources during project planning (BLM Manual 6840). Conservation actions identified in the NCA RMP (BLM 2001) have recently been implemented (see Conservation Measures Planned or Implemented below).

Potentilla basaltica is not currently listed by the State of Nevada but is considered threatened by the Nevada Native Plant Society (NNHP 2001). It is on the California Native Plant Society's (CNPS) 1B list (plants considered rare, threatened, or endangered in California and elsewhere). All plant species on the CNPS 1B list meet the definitions under the Native Plant Protection Act (Sec. 1901, Chapter 10) and the California Endangered Species Act (Secs. 2062 and 2067) of the California Department of Fish and Wildlife Code, and are eligible for State listing. The species is not listed by California under its State Endangered Species Act, but plants on the CNPS 1B list must be fully considered during the environmental documentation process under the California Environmental Quality Act (CEQA) (CNPS 2001). However, CEQA only requires disclosure of a project's impacts on the species; it does not provide protective management for *P. basaltica*.

E. Other natural or manmade factors affecting its continued existence. Two reservoirs were created at the south end of Soldier Meadow, and within the valley, many of the spring outflows have been channelized and watercourses have been altered from historic patterns. The introduction and spread of Russian olive along the riparian zone is also likely to affect water flows (Knight 1990), which in turn influences soil moisture and other habitat characteristics.

CONSERVATION MEASURES PLANNED OR IMPLEMENTED

The BLM has issued a Record of Decision on the Resource Management Plan (RMP) and Final Environmental Impact Statement for the Black Rock Desert-High Rock Canyon Emigrant Trails NCA, which encompasses the Soldier Meadow area, addresses many of these issues (BLM 2003). In accordance with the terms of the 2004 Final Multiple Use Decision for the Soldier Meadow Allotment, 3,000 acres was fenced in 2003 to exclude exclude livestock and wild horses from the majority of *P. basaltica*, desert dace, and *P. notidicola* habitats (BLM 2004).

In May 2004, the BLM completed a draft Environmental Assessment for the Soldier Meadows Recreation Management Plan. The management plan implemented numerous conservation actions identified in the RMP for the listed and candidate species of Soldier Meadows that closes access roads to the spring, riparian and wetland areas, limits vehicles to designated roads and trails, establishes a central campground away from sensitive habitats, and implements a monitoring program to assess the effects of these actions on listed, candidate, and sensitive species. It also includes the installation of educational signage and an increased presence of BLM staff, including law enforcement, and a volunteer site steward.during the six-month primary public use period. The steward directly interacted with the visitors to provide public outreach. All of these actions, with the exception of the monitoring program, were fully implemented over the past year and are reported to have been successful at reducing recreational impacts to the habitats of sensitive species, including that of *Potentilla basaltica* (Matt Varner, personal communication, 2005).

SUMMARY OF THREATS (including reasons for addition or removal from candidacy, if appropriate)

Actions have now been taken by the BLM that reduce or eliminate the magnitude of direct threats to *Potentilla basaltica* and its habitat. Many of the actions that have impacted the habitat of the basalt cinquefoil in the past, however, are likely to have resulted in changes in the ability

of the habitats to support the species. While the magnitude of threat has been reduced through the reduction or elimination of direct threats, a moderate to low magnitude of threat still exists from the on-going effects of past actions. In addition, while some of the actions, such as the fence built to exclude livestock and other large mammals, are expected to benefit the species in the short-term they may also have unanticipated long-term effects especially since invasive plant species are known to occur in the area. Without monitoring data that shows short-term effects and assesses the potential long-term effects of current management, it would be premature to remove *Potentilla basaltica* from candidate status.

For species that are being removed from candidate status:

___Is the removal based in whole or in part on one or more individual conservation efforts that you determined met the standards in the Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)?

RECOMMENDED CONSERVATION MEASURES

Short-term and long-term monitoring of the effects of current management on *Potentilla basaltica* should be implemented as soon as possible. The monitoring should identify specific indicators that will be monitored, set clear management objectives, and specify the management response given a range of alternative results (Elzinga *et al*., 1998). Other actions required on an annual basis, such as increased staff presence and campground hosting should be continued. Compliance with the designated route system should also be monitored.

LISTING PRIORITY

THREAT			
Magnitude	Immediacy	Taxonomy	Priority
High	Imminent	Monotypic genus	1
		Species	2
		Subspecies/population	3
	Non-imminent	Monotypic genus	4
		Species	5
		Subspecies/population	6
Moderate to Low	Imminent	Monotypic genus	7
		Species	8
		Subspecies/population	9
	Non-imminent	Monotypic genus	10
		Species	**11**
		Subspecies/population	12

Rationale for listing priority number:

Magnitude: Conservation measures recently implemented by the BLM have substantially

reduced or eliminated the magnitude of the direct threats to *Potentilla basaltica* and its habitat. These conservation measures include the installation of fencing to minimize trampling impacts of domestic livestock and other large mammals; the closing of road access to spring, riparian, and wetland habitats that support the basalt cinquefoil; restriction of vehicles to designated routes; the establishment of a designated camping area, installation of educational signage, and an increased BLM presence, including law enforcement, a campground host..

Imminence: Threats to the *P. basaltica* are largely indirect, such as long-term changes in the habitats supporting the basalt cinquefoil that may result from past recreation, grazing, trampling, and/or hydrologic alteration, impacts or the potential for increased competition from invasive plant species. We continue to consider these threats to be non-imminent.

Rationale for Change in Listing Priority Number (insert if appropriate) The reduction in magnitude of threat due to the implementation of conservation measures has resulted in a change in the LPN from 5 to 11.

___ Have you promptly reviewed all of the information received regarding the species for the purpose of determining whether emergency listing is needed? Yes

Is Emergency Listing Warranted? No

DESCRIPTION OF MONITORING
Some permanent transects were established in the past, but the data collected have not been located and the adequacy of these data for establishing trend it is not known. If these data are not located, new protocols for monitoring designed to assess the effectiveness of the conservation measures will need to be developed.

COORDINATION WITH STATES
Indicate which State(s) (within the range of the species) provided information or comments on the species or latest species assessment:

Indicate which State(s) did not provide any information or comments: Nevada and California.

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APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes, including elevations or removals from candidate status and listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all resubmitted 12-month petition findings, additions or removal of species from candidate status, and listing priority changes.

Approve: /s/ Paul Henson April 26, 2006
Acting CNO Manager, Fish and Wildlife Service Date

Concur: _____ August 23, 2006
Acting Director, Fish and Wildlife Service Date

Do not concur: _____
Director, Fish and Wildlife Service Date

Date of annual review: October 2005
Conducted by: Steve Caicco